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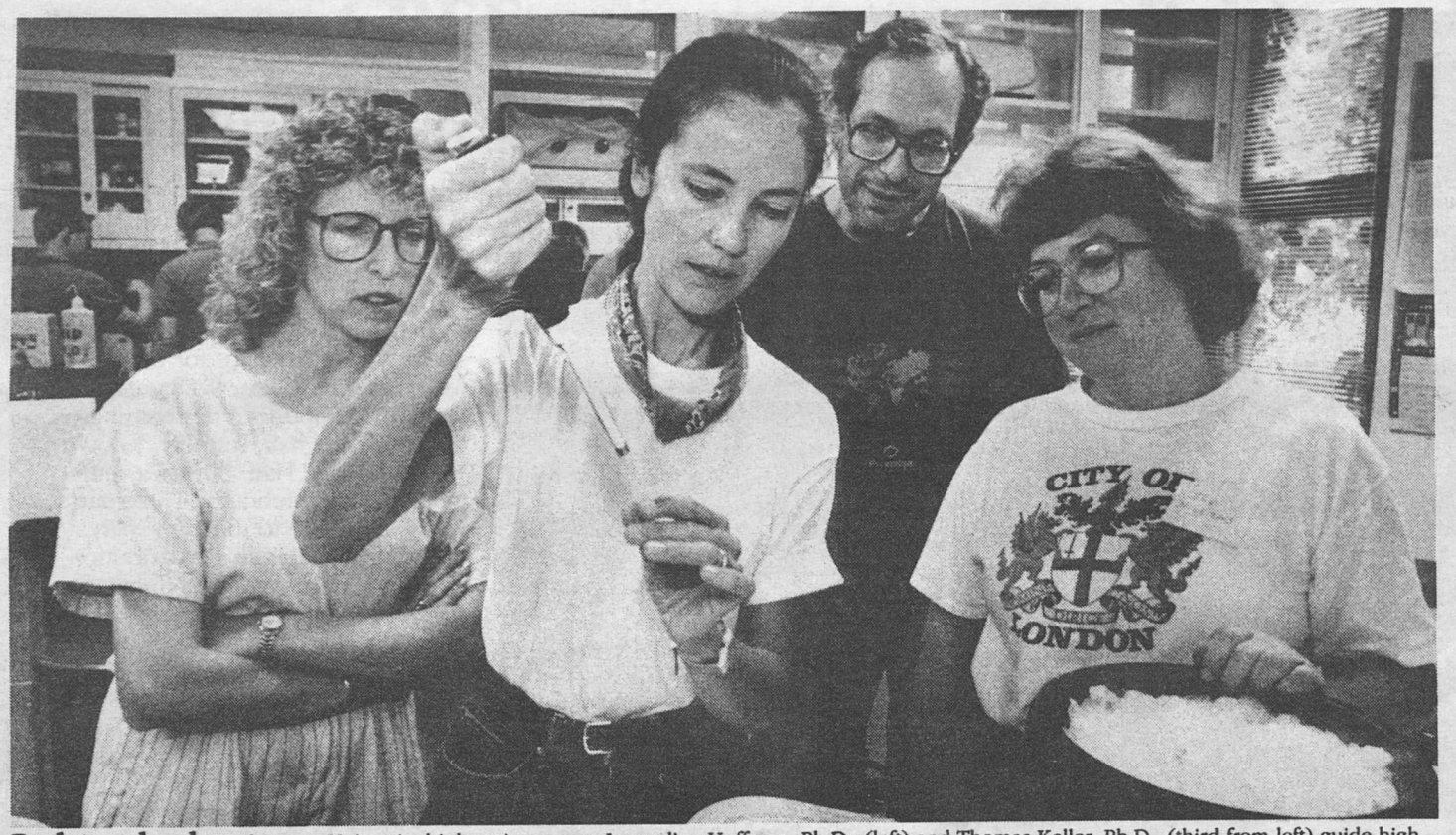

Back to school: Washington University biology instructors Jacqueline Hoffman, Ph.D., (left) and Thomas Keller, Ph.D., (third from left) guide high school teachers Judith Crouch and Sue Hinrichs through a molecular biology experiment as part of a recent three-week course for 20 St. Louis County high school science teachers. Titled "Molecular Biology: The Gene Revolution," the short course is taught by University scientists who have been in the forefront of molecular biology breakthroughs during the 1980s. The lecture/laboratory course is designed to illustrate molecular biology techniques to high school teachers who then can relay their knowledge to their students. Sarah C.R. Elgin, Ph.D., professor of biology, directs the program. Other University scientists who gave lectures and laboratory instruction are Roy Curtiss III, Ph.D., Roger N. Beachy, Ph.D., David Schlessinger, Ph.D., and Ian Duncan, Ph.D.

Hamburger receives second national science award

Within a six-month period, Viktor Hamburger, Ph.D., Edward Mallinckrodt Distinguished Professor emeritus of biology, has received two of the nation's highest science accolades.

In April, Hamburger received the 1990 Karl Spencer Lashley Award from the American Philosophical Society in Philadelphia, the nation's first learned society that traces its roots to the philosopher, inventor and statesman Benjamin Franklin. During a White House ceremony in October 1989, President Bush awarded Hamburger the National Medal of Science, the country's highest scientific honor.

The Lashley Award honors Hamburger for his pioneering studies in neuroembryology, the study of the nervous system in embryos. The certificate highlights Hamburger's "landmark contributions to understanding neural cell death, Nerve Growth Factor and the developmental program for motor behavior."

The selection committee members for the award were internationally known researchers Eric R. Kandel of the College of Physicians and Surgeons, Columbia University, Seymour S. Kety of the National Institute of Mental Health, Walle J.H. Naute of Massachusetts Institute of Technology, and Torsten N. Wiesel of Rockefeller University.

The Karl Spencer Lashley Award was established in 1957 by a gift from Lashley, who was a member of the American Philosophical Society. At the time of his death in 1958, Lashley was emeritus research professor of neuropsychology at Harvard University and emeritus director of the Yerkes Laboratories of Primate Biology in Florida. He devoted his career to the study of behavior and its neural and physiological basis. He is considered to be the first scientist to demonstrate the relationship between brain mass and learning ability.

"The Lashley Award is a very special treasure, in large part because I knew Dr. Lashley very well," says Hamburger, who met Lashley in 1932 when both were faculty members at the University of Chicago. "I am very pleased that more than half a century later, we are associated again."

Hamburger came to the University of Chicago from his native Germany on a research fellowship in 1932, shortly before Hitler came to power. Within weeks of arriving at the University of Chicago, he met Lashley, a professor of psychology, who was working on theories of memory and learning in primates.

"We shared many interests and our work had some similarities," Hamburger recalls. "One of the most startling phenomena in embryos is their ability to regulate. In the two-cell stage, for instance, if you remove one cell from the embryo, the remaining cell can produce a whole embryo. At the time, I was one of a few at the University of Chicago who knew these details of the embryonic stage. Dr. Lashley found, strangely, that the brain of a rat, when half was re-

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National vista dims

Haze cuts view 25 percent; Southeast hit hard

"Ah, the Atlantic Ocean! You should have seen it then."
Burt Lancaster in "Atlantic City."

Like Lancaster yearning for "the good old days," visitors to America's parks and vacation havens are finding that vistas just aren't what they used to be.

Haze, the visible evidence of regional air pollution, is pervasive from the vast rim of Arizona's Grand Canyon to the misty Carolina Smoky Mountains, from the stark plains of the Little Bighorn battlefield in Montana to Oregon's lush Cascade Mountains.

But if decades-long haze trends continue as they have, the degree of visibility this summer will be better for vacationers at Cape Cod or Atlantic City and worse for those at Myrtle Beach or Disney World, says Rudolf B. Husar, Ph.D., professor of mechanical engineering and one of the country's leading air pollution experts.

In a report written for the National Acid Precipitation Assessment Program (NAPAP), a massive federal study of acid rain and related environmental concerns, Husar reveals that the distance we can see in the United States — our "national vista" — dimmed 25 percent from 1948 to 1983. The culprit is haze. While summer visibility in the "Acid Rain Corridor" of the Northeast has improved over the same period, visibility in the Southeast has declined 80 percent. In addition, Husar reveals data that for the first time link trends in seasonal sulfur emissions with the haze amounts in the eastern U.S. skies.

"Our data indicate a success story in the Northeast and a silent dilemma in the Southeast," Husar says. "On the bright side, the national visibility problems seem to be improving since the 1970s; the flip side of this is the Southeast is emerging as one of the nation's 'dim spots.'"

Husar used data from the University's Center for Air Pollution Impact and Trend Analysis (CAPITA), the world's largest private library for air pollution literature and computerized statistics, which spans more than 100 years of American pollution and energy consumption data.

Data for the visibility trend study came from the National Weather Service. Hourly visual range observations from 600 meteorological stations for a 40-year period were analyzed.

Husar's contribution to the report, "Visibility: Existing and Historical Conditions — Causes and Effects," appears in *State of Science and State of Technology,* a summary of NAPAP. The program, launched 10 years ago, drew upon scientists across many disciplines and was funded at approximately $60 million per year.

Poor air, poor views

The distance we can see in a national park is one consideration, but the quality of the view and the air are other factors that have changed the public's perception of national parks, says John Christiano, chief of the air quality division of the National Park Service in Lakewood, Colo.

"Today the point may be more not how far you can see in the national parks, but how well you can see," says Christiano. "The blue mist of the Smoky Mountains has turned gray in recent years because of the encroachment of sulfates from urban areas surrounding the park. On some days, the range of what you can see is as good as it was many years ago, but the quality of what you're seeing is poor."

Haze is the end product of pollutants drifting from their sources with weather patterns and mixing with other pollutants, fanning out as far as 600 miles from their sources. The amount of haze in the air can be an indicator of a potential acid rain problem. Cumulus clouds are scavengers of pollutants, sucking up aerosols and cleansing the air by spewing out the chemicals in rain. But the same salvation also brings acid rain.

North and South

"Visibility in the area southeast of the Ohio River has diminished rapidly over the past four decades, largely because of increased energy use in the area," Husar says. "The population boom in the South, of course, has contributed to that, reflecting one of the oldest laws of pollution studies: people equal pollution. But there are other intriguing variables at work in these surprising developments."

For instance, Husar notes that the Northeast (with the Great Lakes region, long identified as the nation's chief acid rain producer) pumped about four million tons of sulfur and nitrous oxides into the atmosphere during the summer months in the early 1980s, compared with about two million for the Southeast. Yet haze increased dramatically in the South compared with the North.

"There is a significantly higher haziness per sulfur emission in the Southeast than in the Northeast, and there seem to be several factors at play," says Husar. "While we cannot say for sure why this is, higher humidity, more stagnating air masses and higher sulfur dioxide oxidation may be ingredients for more haze in the Southeast than the Northeast."

The South's summer atmospheric chemistry, Husar explains, may be more conducive to rapidly converting sulfur, a gas, to sulfate, an aerosol,

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License plates stamped with logo offered

Washington University faculty, staff, students and alumni living in Missouri are eligible for collegiate license plates stamped with the University's logo.

The plates, issued by the state of Missouri, require a special $25 gift to the University's "License to Learn" fund. *A minimum of 450 gifts must be received before Washington University plates will be authorized.* All gifts will be returned if fewer than 450 apply.

This opportunity is offered as a service to Missouri members of the University community who wish to show their loyalty. A brochure containing a special gift form and "Emblem Use Authorization Statement" will be mailed to potential applicants within the next few weeks.

Qualifying gifts must be received by Sept. 15. The validated authorization statement will be returned to each participant. This form must accompany the application to the Missouri Department of Revenue for these special plates. Application also will require an additional $15 state fee.

For information, call 889-5191.

Kids learn to kick: Katie Wiest, age 8, works her way through an exercise in the Department of Athletics soccer camp. The camp, for boys and girls ages 7-15, is part of the Bear's Summer Programs, which include a football passing camp, basketball camp, HIT volleyball camps and adult tennis. The soccer camp, now concluded, is headed by Ty Keough, head soccer coach at the University. Camps this year are either over or full.

Haze — *continued from p. 1*

with the ultimate by-product being acid aerosol. Also, the Southeast is subject to the Atlantic High Pressure System, which keeps warm, muggy air at a standstill for three to five days at a time, holding the sulfur, nitrous oxides, soot and particulate matter in place for long periods. In the Northeast, cold Canadian air disperses the haze on a more regular basis.

"At this time, no one has hard evidence, but meteorological conditions seem to have played a significant role in the haze buildup in the Southeast," Husar says. "To say the weather/haze relationship is strictly cause-and-effect, however, is incorrect."

Haze increased the most during the 1950s and 1960s in the Southeast, according to Husar, with a leveling off since 1970. Winter haze in the Southeast jumped 40 percent during the 35-year period. In contrast, northeastern haze in the winter declined 25 percent over the study period; summer haze there showed a wavy pattern on a chart from 1948 until 1970, with a decline since 1970. Haze statistics averaged around the year for the 35-year period show no increase for the Northeast, despite higher tons of emissions than the Southeast, which saw a 60 percent increase in annual haze. For the entire country, haze increased 25 percent during the study — meaning our national vista is only three-fourths of what it was in 1948.

The preponderance of haze in the Southeast does not necessarily imply that the South is becoming an industrial region, although with population gains there over the past two decades, industry has advanced.

According to Husar, the problem is energy consumption. The South, especially the Southeast, predominantly burns coal because of its availability and cheap cost. Nationally, coal still supplies nearly 60 percent of the nation's electricity, followed by oil, natural gas and nuclear power. Summer is the time of peak energy use in the South. While this usually is traced to the heavy use of air conditioning, Husar says a simple act everyone does on a scorching summer day is more responsible for increasing their power bills than the air conditioners.

"People spend more energy, on the average, opening and closing the refrigerator, freezer or cooler than they do on air-conditioning," Husar says. "The South needs refrigeration on a greater scale for a longer time than the North does."

On the encouraging side, haze is declining during the winter in the Northeast, the region's peak energy season, for a variety of reasons.

"Certainly, environmental awareness was influential in improving the visibility in the Northeast," Husar says. "There was a shift in energy use from coal to oil beginning in the late '60s. I think this had a lot to do with availability of cheap oil and in difficulties transporting coal from the Coal Belt."

Husar cautions that his study illustrates trends in seasonal sulfur emissions combined with haze patterns, and cannot match specific pollutants with their origins.

There is a need for more studies involving "tracer" techniques, which can pinpoint the sources of haze.

"Presently, there is no 'smoking gun' approach to analyzing emissions, but there is clear progress in developing tracer techniques," Husar says. "These techniques collect aerosols, analyze them chemically, extracting the chemical components and then researchers try to match them to their sources. These sorts of techniques will make air pollution studies a more precise science and will help troubled areas clean up more quickly."

Husar cites a study by fellow Washington University researchers Warren White, Ph.D., senior research associate in chemistry, and Provost Edward S. Macias, Ph.D., professor of chemistry, that compares the chemistry of haze found at the Grand Canyon to pollutants that are emitted in Los Angeles. The researchers have strong suspicions that the troublesome haze over the Grand Canyon and other national parks in Utah, Nevada and Arizona may be traceable to the urban areas along the Southern California coast.

Meanwhile, the trend in the accumulation of haze throughout the South will continue to have wider implications for the entire eastern United States, Husar cautions. Air pollution, like a moseying summer traveler, moves 200 to 300 miles a day from its source in three to five days.

"If on a given day Houston puts out a ton of sulfur, in two to three days better than half of that sulfur will be dispersed in skies hundreds of miles away," Husar says. "That is the nomadic nature of regional air pollution, and it is something the nation will have to deal with well into the next century."

Tony Fitzpatrick

History center receives Bradley grant

The Lynde and Harry Bradley Foundation of Milwaukee, Wis., has awarded a $500,000 grant to the Center for the History of Freedom, Chancellor William H. Danforth has announced.

Danforth said the grant will help support the center's activities for the next two years.

The center was established in 1985 to produce a multi-volume series, *The Making of Modern Freedom*, tracing the growth of the ideas and institutions of freedom. This history, the first of its kind, is the conception of J.H. Hexter, Ph.D., John M. Olin Professor of the History of Freedom at the University, who is editor of the first volume. Last July Hexter was succeeded as director of the center and general editor of the series by Richard W. Davis, Ph.D., professor of history.

"Washington University appreciates the generous support given to the history of freedom project by the Bradley Foundation. This grant will help the center continue its creative and original research," Danforth said.

The Bradley grant will support the annual spring semester institute held here. Six to eight internationally known scholars attend the institute as fellows to write individual chapters and jointly edit a volume.

Contributing to this year's volume, the fourth, are scholars from Oxford University, Victoria University in Canada and Victoria University in New Zealand, as well as distinguished American academics. The volume is titled *Republican Liberty: Its Theory and Practice in Early Modern Freedom*.

Next year's volume is on "The Conditions of Freedom in the New American Republic."

The Bradley Foundation, which supports higher education, social services, community development and cultural programs, also sponsors a distinguished commission that studies the teaching of history in America.

Residence hall is named for Herbert Hitzeman

To mark the distinguished career of Washington University's chief advancement officer, the University has named a residence hall after Herbert F. Hitzeman Jr.

Hitzeman retired June 30, 1990, as senior vice chancellor for university relations. Chancellor William H. Danforth announced the naming of the residence hall, formerly known as "G" Residence Hall, during a retirement dinner celebrating Hitzeman's 24 years of service to the University.

"Herb Hitzeman's contribution to Washington University is immeasurable," said Danforth. "Under his direction, the University not only successfully completed three major fund-raising campaigns, but also all areas of alumni, development and public relations have shown extraordinary improvement. The results of his work will benefit generations of students. I think it highly fitting that Herbert Hitzeman's name appears on a building that houses our students."

During his retirement dinner, Hitzeman also was presented with a sketch of the residence hall, drawn by Roscoe Misselhorn, a 1928 graduate of the School of Fine Arts.

A plaque has been placed in the lobby of the Hitzeman residence hall, which is located at the corner of Wydown Boulevard and Shepley Drive. The plaque reads: "Named in Honor of Herbert F. Hitzeman, Jr., B.F.A., 1953 Senior Vice Chancellor for University Relations. The results of his vision, dedication, and planning will endure for generations to come. June 30, 1990."

Library orientation

Olin Library will offer electronic orientation sessions this summer.

The library has become more automated over the past few years. For example, a computer can scan data on a CD-ROM (compact disk-read only memory) and provide answers in minutes, where previously it took hours of searching through reference volumes. Also available at Olin is the OCLC super computer, which stores information on some 20 million items.

To attend an orientation session, call 889-5437 by July 16.

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NOTABLES

Andrew D. Dimarogonas, Ph.D., William Palm Professor of Mechanical Design, has been elected a fellow by the board of governors of the American Society of Mechanical Engineers (ASME). To be elected to this distinction, a member of the ASME must have at least 10 years of active practice and continuous membership in the ASME and have been responsible for significant engineering achievement.

Thomas C. Fox, Ph.D., assistant professor of German, recently gave lectures on East German culture and politics at the University of Michigan in Ann Arbor, at Washington University's 10th St. Louis Symposium on German Literature and at the Albuquerque Museum in Albuquerque, N.M. He also chaired a session on East Germany at the Kentucky Foreign Language Conference in Lexington, Ky., and he spoke about recent developments in Germany at Wesleyan University in June.

Udo Kultermann, Ph.D., Ruth and Norman Moore Professor of Architecture, had his lecture "The Foundations of Deconstruction: Martin Heidegger and Architectural Theory" published in two parts in the Yugoslavian magazine Covjek I Prostor in Zagrab.

Naomi Lebowitz, Ph.D., Hortense and Tobias Lewin Distinguished Professor in the Humanities in the Department of English, has had her book *Ibsen and the Great World* published by the Louisiana State University Press.

Adrian Luchini, assistant professor of architecture, and his joint venture firm are featured in Progressive Architecture's July issue in a section on young architects from the United States. Luchini's firm, Denison Schwetye Luchini Maritz Inc., was one of 20 firms selected from a pool of 498. Three of the firm's current projects will be featured in the magazine. In addition, the firm will be featured in the September issue of Domus, an Italian architecture magazine. Luchini and Dirk Denison are principals of the firm.

Dorothy E. Toran, instructor of psychiatry, delivered a paper, titled "From Clinician to Supervisor: Transition Problems and Processes," at the Missouri Association for Marriage and Family Therapy annual conference held in St. Louis.

Michael J. Welch, Ph.D., professor of radiation chemistry at the School of Medicine's Mallinckrodt Institute of Radiology, was the recipient of the prestigious American Chemical Society (ACS) Award for Nuclear Chemistry in recognition of his research in the field of radiopharmaceutical chemistry. His work, focusing on the labeling of chemical compounds with short-lived radionuclides, is used worldwide in biology and medicine. The award, now in its 35th year, was established to recognize and encourage research in nuclear and radiochemistry or their applications, with the recipient being chosen from more than 30,000 ACS members.

Samuel A. Wickline, M.D., assistant professor of medicine, was an invited speaker at the Russian Annual Symposium on Recent Advances in Echocardiography, held in Moscow under the auspices of the All-Union Cardiology Center. His topic was "Ultrasonic Tissue Characterization of Ischemic Heart Disease and Detection of Stunned Myocardium." The All-Union Cardiology Center is a combined research and patient care facility funded by the Soviet Ministry of Health, and similar in many respects to the National Heart, Lung and Blood Institute of the National Institutes of Health in Washington, D.C. More than 400 medical scientists, physicians and technologists representing a majority of the Soviet Union's republics attended the symposium.

Stuart D. Yoak, Ph.D., university registrar, presented a paper titled "Business Ethics in Academic Administration" at the recent annual conference of the American Association of Collegiate Registrars and Admissions Officers (AACRAO) in New Orleans. He was invited by the AACRAO Office Organization and Management Committee, which sponsored the session.

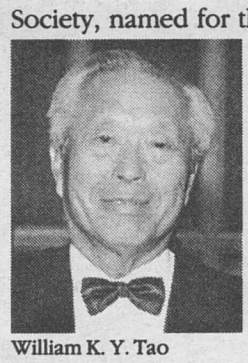
Have you done something noteworthy?

Have you: Presented a paper? Won an award? Been named to a committee or elected an officer of a professional organization? The Washington University Record will help spread the good news. Contributions regarding faculty and staff scholarly or professional activities are gladly accepted and encouraged. Send a brief note with your full name, highest-earned degree, current title and department along with a description of your noteworthy activity to Notables, Campus Box 1070, or by electronic mail to p72245SS at WUVMC. Please include a phone number.

Noted alumnus William K. Y. Tao receives Eliot Society award

William K. Y. Tao, retired chairman and founder of the engineering firm William Tao & Associates Inc., received Washington University's prestigious William Greenleaf Eliot Society "Search" Award during the society's annual dinner, held at the Ritz-Carlton Hotel in Clayton.

The William Greenleaf Eliot Society, named for the University's founder and chancellor from 1870 to 1887, is an organization of more than 2,000 local and national members who have expressed interest in perpetuating the principles of higher education. The Search Award honors an individual who has enriched the University by his or her interest and support.


William K. Y. Tao

Earle H. Harbison Jr., president of the Eliot Society, presented Tao with a silver and marble replica of "The Search," a sculpture by Heikki Seppa, professor of fine arts at the University.

A Washington University alumnus and member of the Board of Trustees since 1975, Tao has served as a key fund-raiser for the University. His idea to promote named annual scholarships in the engineering school has been adopted by all schools at the University. During his tenure on the Board of Trustees, he has served on the development, educational policy, and buildings and grounds committees. He is an avid tennis player and the University's tennis center bears his name.

Born in Beijing, China, Tao was educated in his native country, where he received a bachelor's degree in mechanical engineering from Chekiang University and a bachelor's degree in electrical engineering from Southwestern University.

Tao came to the United States in 1947 to attend Washington University, where he received a master's degree in mechanical engineering in 1950. Upon graduation, he joined the University's School of Engineering as an instructor. After five years, he left the faculty to start his own consulting firm. He serves as an affiliate professor in both the engineering and architecture schools at Washington University.

Tao's firm, which he started in 1956, specializes in mechanical, electrical and energy engineering projects throughout the United States and overseas that represent an overall construction value in excess of $4 billion. He is recognized internationally as a leader in engineering systems design and is responsible for a number of innovative energy-effective concepts and applications. His firm's clients include the builders and architects for many of the structures involved with the renaissance of downtown St. Louis and St. Louis County.

Among the numerous awards Tao has received are the 1989 Engineer of the Year designation from the Missouri Society of Professional Engineers, the 1986 Louis B. Marks Award from the Illuminating Engineering Society and, in 1985, the Award of Merit from the St. Louis Engineers Club. Washington University also has honored him twice before — in 1971 with the Alumni Board of Governors' Distinguished Alumni Award and the School of Engineering's Alumni Achievement Award in 1982.

Archaeology society honors Watson

Patty Jo Watson, Ph.D., professor of anthropology, received the Fryxell Medal for 1990 from the Society for American Archaeology.

The award, which carries a certificate and a medal, recently was presented to Watson at the annual meeting of the society, held in Las Vegas, Nev. The medal recognized Watson for "the archaeological community's great respect and gratitude for your outstanding scientific contributions to understanding the human past in the Americas."

Jeremy A. Sabloff, president of the Society for American Archaeology, calls Watson "one of the most highly respected archaeologists, not only in the United States but also worldwide. This is a very fitting award which recognizes her tremendous past and continuing contributions to interdisciplinary research." Watson's archaeological work involves botany, zoology and geology.

The Fryxell Medal was established in 1977 by the family of Roald Fryxell, a geologist who applied his geologic expertise to archaeological sites. "The family decided that the best memorial to him would be to encourage the kind of research he exemplified in his own work," says Watson.

Watson, who in 1988 was elected to the National Academy of Sciences, is well known for her studies of the people who lived some 4,000 years ago in Tennessee and Kentucky, where they explored the wide-ranging cave systems of that area. Much of her work documents the origins of plant domestication in North America.

"All of her colleagues at the University are pleased to see Pat once again recognized nationally for her contributions to her field of research," says Martin H. Israel, Ph.D., dean of the Faculty of Arts and Sciences.

A member of the Cave Research Association, the National Speleological Society and a fellow of the American Association for the Advancement of Science, Watson has written eight books and dozens of scholarly articles. She has been a member of the Washington University faculty since 1969. She earned a master's degree in anthropology in 1956 and her doctorate in 1959, both from the University of Chicago.

Thomas Hall memorial service is held

A memorial service was held June 17 in Graham Chapel for Thomas Steele Hall, Ph.D., a former dean of the College of Liberal Arts at Washington University and a longtime professor of biology here. Hall died Tuesday, June 12, 1990, after suffering a heart attack at Barnes Hospital. He was 81.

Hall joined the Washington University faculty as an associate professor of zoology in 1945. He was appointed dean of the college in 1949 and held the post for 12 years. Although he retired officially in the early 1970s, he continued to teach from time to time, holding the title of University Professor of Biology.

Born and raised in St. Louis, Hall received both a bachelor's and a doctorate from Yale University. He studied further at Princeton and Harvard universities and at the University of Michigan Medical School.

In 1970, he was given the prestigious William Greenleaf Eliot Society "Search" Award for distinguished service to the University.

Hall was a prolific writer of articles on scientific matters and on the history of science and medicine. After he retired from teaching, he wrote a two-volume book called *Ideas of Life and Matter*, which later was reprinted in paperback as *History of General Physiology*. He also translated and wrote commentary on *Treatise of Man* by Rene Descarte.

Chancellor William H. Danforth said, "Thomas Hall was an example for us all — a scholar, a man of culture, a wise academic leader, a humane and sensitive individual."

Among the survivors are his wife, the former Mary Taussig Tompkins; two stepchildren, Mary Tompkins Houghton of Philadelphia and Frederick Kingsbury Tompkins, who is moving back to St. Louis from New York City; a sister, Margaret Bierman, of Caledonia, Mo.; and two brothers, Leonard Hall of Caledonia, and Arthur Hall, of Hilton Head, S.C.

Memorial contributions may be made to Washington University, where a lectureship is named in his honor, or to the College of the Atlantic in Bar Harbor, Maine.

Law prize endowed in memory of University nurse

The family of Christophine G. Mutharika, a nurse for Washington University's Health Services who died Jan. 30, 1990, has endowed a permanent prize to be awarded to a third-year law student who achieves the highest final grade in international law.

The first annual Christophine G. Mutharika International Law Prize was awarded to Jill Suzanne Baker during the law school's Commencement ceremony May 18.

Mutharika, a University nurse for nearly 13 years, was the wife of A. Peter Mutharika, J.S.D., professor of law and a specialist in international law. The prize was endowed by Professor Mutharika and his and Christophine's three children, Monique, Moyenda and Peter Mutharika.

MEDICAL RECORD

Electroshock therapy: Advances lead to quiet revival

For patients drowning in depression, electroconvulsive therapy (ECT) is often a psychiatric lifesaver, pulling them back from despair and withdrawal to a normal life. Yet some patients and doctors still view ECT, a treatment based on electrically-induced brain seizures, in a negative light, largely because of public misconceptions and misinformation regarding delirium, memory loss and other side effects associated with ECT.

Those adverse effects are no longer as severe as they once were, but to minimize them even further, a psychiatrist at the School of Medicine is using magnetic resonance imaging (MRI) to identify patients at risk for developing side effects from ECT. With MRI, Gary Figiel, M.D., and three Duke University colleagues examined the brains of elderly depressed patients who were to undergo ECT. The small number who experienced delirium as a side effect had pre-existing brain abnormalities that may have been associated with the problem, they found. The work is published in the winter 1990 issue of the Journal of Neuropsychiatry and Clinical Neurosciences.

In a related study reported last year in Convulsive Therapy, Figiel confirmed that elderly depressed patients often come to therapy with structural brain changes that may contribute to the development of their depression. Further work, he says, may identify which changes correlate with treatment response and with side effects — and help determine when and how ECT should best be administered.

"Classically, we think of depression as a psychological response to an event, such as the loss of a job," says Figiel. "But a large percentage of depressed patients, especially the elderly, have markedly abnormal brains that may in some way be contributing to the etiology of depression in the elderly. Specifically, the brains of elderly depressed patients have a lot of atrophy and enlarged ventricles and extensive subcortical structural changes."

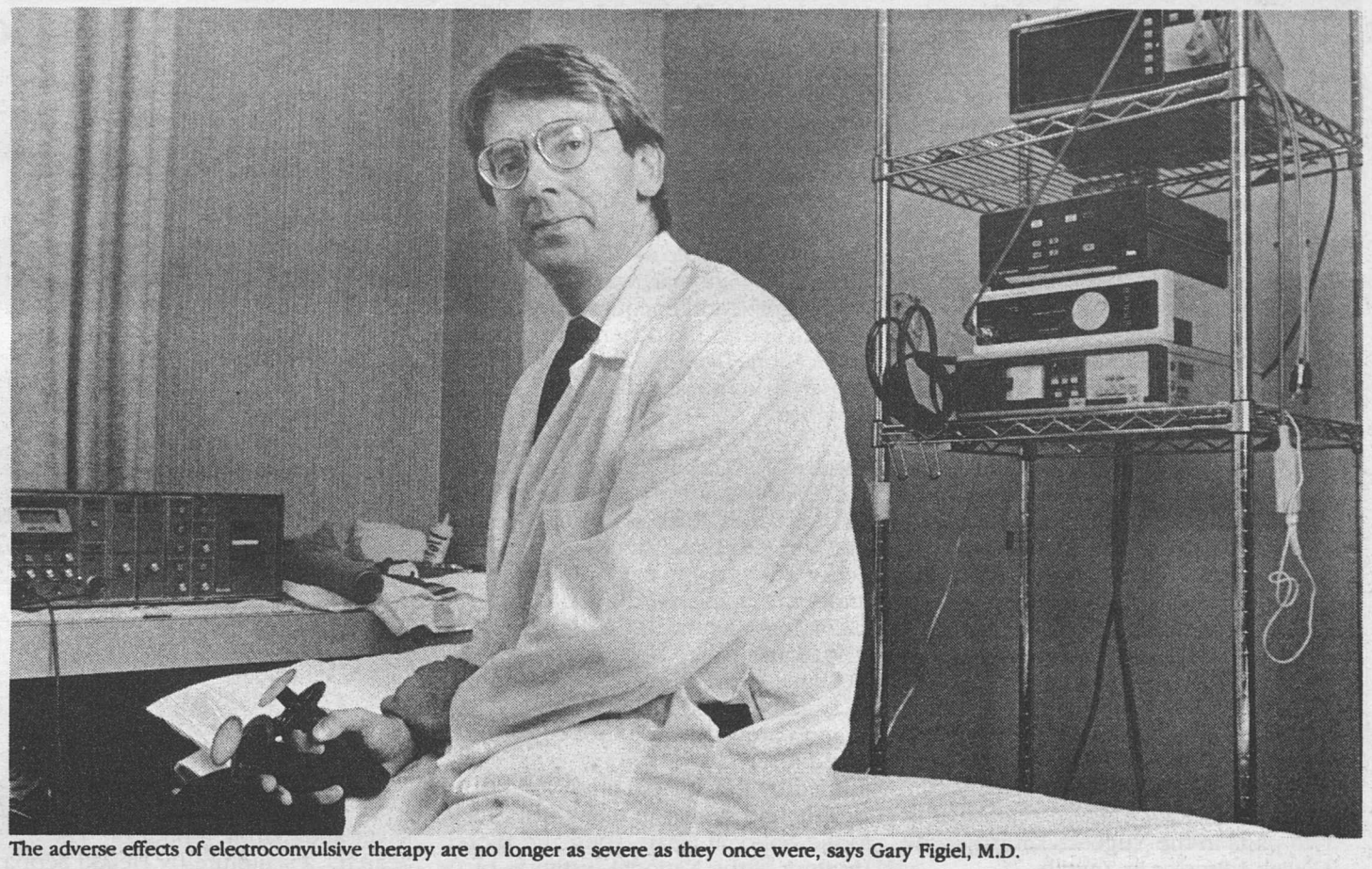
The researchers used MRI to assess a variety of types of brain lesions. They found that elderly depressed patients have a higher occurrence of severe lesions in the brain's white matter and basal ganglia, an area that may be involved in regulating attention and mood, compared with age-matched controls.

The researchers found basal ganglia lesions in nine of ten patients (90 percent) who developed post-ECT delirium, compared to 30 of 77 (39 percent) without delirium. Of the 48 patients who did not have basal ganglia lesions, only one developed delirium after ECT.

MRI also detected moderate to severe white matter lesions in nine of ten patients (90 percent) with ECT-related delirium. In 77 patients without delirium, 35 (45 percent) had moderate to severe deep white matter lesions.

The cause of these brain lesions is not known. However, data suggest that in the elderly, there may be a thickening of the small blood vessels that irrigate the brain's basal ganglia and subcortical white matter. These areas are considered particularly sensitive to decreased perfusion.

As to how these lesions could be associated with an ECT-induced delirium, Figiel says, "We can only speculate. The basal ganglia and subcortical white matter have extensive connections with cortical areas known to be important in regulating attention. It's possible that lesions in these areas may disrupt or disconnect these pathways, making some patients more vulnerable to disturbances of attention and vigilance, which are the hallmarks of delirium." Not every patient with lesions develops delirium, he points out, and further study is needed to develop techniques for accurately identifying those who are susceptible.



The adverse effects of electroconvulsive therapy are no longer as severe as they once were, says Gary Figiel, M.D.

A cuckoo's nest?

No one yet understands why it works, but ECT is a respected form of therapy today for depression, mania and some forms of schizophrenia. More than 30,000 patients receive ECT treatments each year in the U.S. and, among patients with severe depression who have not responded to psychotherapy or medication, it is effective more than 90 percent of the time.

It can have a dramatic effect on a patient's life, says Figiel. Recently he treated a typical case: a 70-year-old woman, ill for two years with devastating depression. She had become anxious, withdrawn and immobilized by guilt and feelings of worthlessness, and was even contemplating suicide. After a series of ECT treatments, she was back to her normal state of health.

"Yet there is still a 'One Flew Over the Cuckoo's Nest' mentality out there about ECT," Figiel comments. "People are very sensitive about using it, and it is probably often withheld in the community when it could be a highly effective, safe treatment."

Checkered history

The reason for ECT's poor public image lies in its checkered history. ECT was first used on a human patient in 1938 by Italian psychiatrist Ugo Carletti, who was investigating epilepsy. He induced a series of seizures in a disoriented, hallucinating man who had been found wandering in a Rome train station. The patient, who proved to be an engineer from Milan, made a full recovery.

Word of the method spread rapidly and soon it was used, inappropriately, for all forms of mental illness. "Shock mills" sprang up, treating thousands of patients in assembly-line fashion. Treatment often entailed such alarming side effects as bone fractures, oxygen deprivation and reported long-term memory loss.

In the early 1950s, public sentiment began turning against ECT as new drug treatments for mental illness became available. Yet it was never entirely abandoned; many patients who did not respond to medication or psychotherapy needed it. And over the past 10 years, ECT has undergone a quiet revival, with the discovery of new ways to make it more safe and effective.

In 1978, a task force of the American Psychiatric Association (APA) declared that ECT is a valuable form of psychiatric treatment; in 1985, the National Institutes of Health also endorsed it. This year, a new APA committee reiterated its approval and added its recommendations in such areas as improved resident training and repeated ECT usage.

ECT today

An ECT treatment today, properly performed, bears no resemblance to the horror-filled therapy of the Cuckoo's Nest. On the average, a patient needs six to 10 treatments, three per week. Each patient is carefully screened for possible medical complications before treatment, and at the start of the ECT session is given an anesthetic and a muscle relaxant to prevent any possibility of fractures during the seizure.

During three to four minutes of sleep, the patient is treated and closely monitored by a highly skilled team of professionals: a specialist, such as Figiel; an ECT-trained nurse; and a nurse-anesthetist or anesthesiologist. Two electrodes are usually applied to one cerebral hemisphere — the "unilateral method" — and a small current of electricity lasting approximately one to two seconds passes into the patient's brain.

"We usually start with 20 joules of electricity, the amount of energy it takes to light a 20-watt light bulb for one second," says Figiel. "The maximum energy our machine can produce is 100 joules, but we don't need it for the vast majority of patients."

The object is to induce a seizure, ideally between 30 and 60 seconds long. For reasons not yet understood, shorter seizures are probably not as effective in stimulating the brain and effectively treating the patient.

Upon waking, the patient is a bit groggy and confused. But in patients under 60, re-orientation only takes an average of 30 minutes; patients over 60 may take up to an hour. "By lunchtime on the day of treatment, most folks are up and about," Figiel says.

Though many never experience it at all, some patients do report a short-term memory disturbance after a course of ECT. This includes difficulty remembering events that occurred from one to three months before treatment, and may extend one to three months after treatment.

"To the best of our knowledge, there is no evidence of permanent brain damage associated with current ECT techniques," Figiel says. "Using newer techniques such as unilateral treatment may help minimize the short-term memory disturbances associated with ECT." In addition, newer machines use the safer "brief pulse" electrical stimulus, which also reduces this short-term memory loss.

Making ECT safer

Figiel is working to make ECT as safe as possible. In a new study to be published soon in the American Journal of Psychiatry, he and other researchers point out that a low dose of intravenous caffeine before ECT helps maintain adequate seizure duration without apparent side effects and allows lower-than-normal energy levels to be used during the treatment.

In the future, he would like to continue his work to pinpoint those patients most likely to suffer side effects. One current research project involves following patients for six months after treatment to see what changes, if any, may occur in brain anatomy as a result of ECT.

"I want to find out more about the long-term prognosis for elderly depressed people with these brain changes," he says. "Is depression an early stage of dementia? Do these people have a more malignant, recurrent type of illness that eventually will not respond to treatment? Can we identify sub-groups of patients who do well with different treatment methods?"

Figiel is certain, however, that ECT will continue to figure as a successful form of therapy. "It has been around for 50 years, and that's because it's so effective," he adds. "For most people, the side effects are minimal compared to being well again."

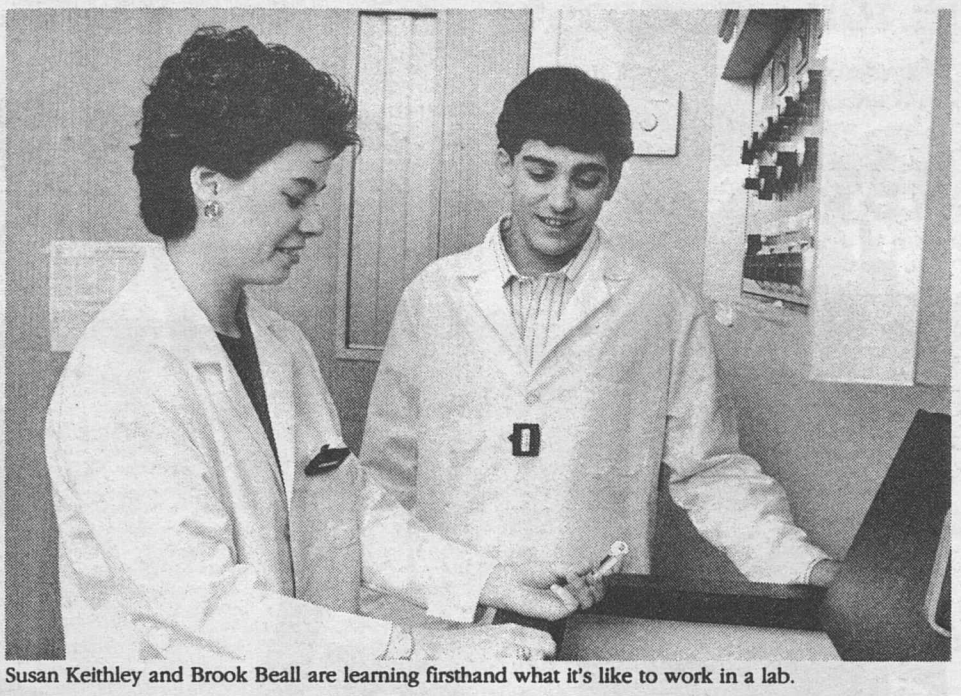
Debra Bernardo

Future scientists

High school students spend summer in labs

Susan Keithley and Brook Beall are studying today to become the scientists of tomorrow. Though still in high school, the two are looking beyond college to prepare for the day when they hope to have the medical science skills necessary to perform delicate surgery or envision new treatment for rare disease.

Under the tutelage of researchers at the School of Medicine, the St. Louis high school seniors are honing a pre-existing interest in the sciences, specifically research and medicine. As two of the first National Kidney Foundation Science Scholars, Keithley, 16, and Beall, 17, will spend 10 weeks of their summer vacation working in laboratories at the School of Medicine. During their stint, they will oversee a research project and write a summary report describing the experience and knowledge gained.



Susan Keithley and Brook Beall are learning firsthand what it's like to work in a lab.

The novel program is part of a nationwide effort by the Kidney Foundation to interest sharp young minds in the field of medical science. In all, four major university medical centers will sponsor eight students during the summer. At the conclusion of the program, one student out of the eight will be awarded a four-year, $10,000 per year scholarship to support study toward a degree related to science and/or medicine.

Keithley and Beall were selected from a pool of applicants taken from 10 high schools in the St. Louis area. Keithley attends Ursuline Academy and Beall attends John Burroughs. Each will receive a $2,500 stipend for participating in the summer research project.

"This program has the potential to encourage the best of our young students to pursue careers in scientific research at a time when the medical community, and the scientific community at large, need to find new ways to stimulate interest in science," said Saulo Klahr, M.D., president of the National Kidney Foundation and director of the renal division at the School of Medicine.

Klahr notes that applications for medical school have declined 25 percent in the last five years. The areas of nephrology, urology and hypertension have been hardest hit.

Keithley, who says her future may hold clinical and laboratory work, has been at the School of Medicine for two weeks. In that time, she has learned about basic laboratory techniques, safety precautions, how to handle certain chemicals and worked with instruments she had never before seen. Her goal in this program is to develop ideas from her research project and apply them to the science project she will work on in school next year. For her research experiment, Keithley is monitoring citrate uptake in kidney cells. She is working in the laboratory of L. Lee Hamm III, M.D., associate professor in the department of medicine.

"During the interview (for the scholarship) I was overwhelmed. When they took me through the labs and I saw all of the equipment, I couldn't believe it," Keithley said. "This program has made me think about what I want, whether it's to work in a lab or go into renal studies. It's a great opportunity and I hope it continues and expands."

Beall, who is intrigued by the "uncertainty" and "the puzzle" of science, said when he heard about the laboratory learning opportunity his first thought was 'Wow.' While here, he is in the laboratory of James Greenwald, M.D., assistant professor of medicine, researching a protein that is produced in the atria of the heart.

"The atmosphere, the people, this is a great lab experience unlike anything you would get in school," Beall said. "There is focus to the study here, whereas in school we survey biology and chemistry. For anyone who is even marginally interested in science, this experience would definitely influence them."

At the conclusion of the 10-week program, students will write an essay describing their research project and how the experience helped them in shaping future goals. Researchers working with the students will evaluate the students' performance paying particular attention to their dedication and ability to work and understand theoretical and practical aspects of the research. Selection of the final scholarship recipient will be made by an outside committee.

Though a pilot project, Klahr says the Science Scholars Award Program was designed as an ongoing program and is scheduled to continue pending corporate sponsorship. Ford Motor Co., Dearborn, Mich., is funding the program this year.

Other medical schools selected to participate in the program are: University of Michigan, Ann Arbor; University of Colorado, Denver; and Vanderbilt University, Nashville. Each university selected two students from high schools within its respective area.

Horton receives Culpeper award for blood research

Glen Hortin, M.D., Ph.D., assistant professor in pediatrics and pathology at the School of Medicine, recently received the Charles E. Culpeper Foundation Scholarship in Medical Science for 1990.

With this award, Hortin will receive $100,000 a year for three years to fund his research focusing on the interactions of a family of molecules in blood called the complement system, which forms part of the body's immune defense in warding off disease. Hortin's interest is in the basic operation of the complement "cascade," a series of consecutive reactions in which complement components interact with one another like dominoes, one triggering the next.

The cascade is activated by the binding of antibodies to invading bacteria or other foreign particles. As a result, bacteria are killed and foreign particles marked for uptake into white blood cells.

In some autoimmune diseases, such as systemic lupus erythematosus, the complement system attacks the body's own cells as well as bacteria. In this illness, characterized by fever, fatigue and skin lesions, complement activation contributes to kidney failure and damage to other vital organs. Hortin seeks to find ways to shut down the complement system when it is damaging normal tissues.

The scholarship program was established in 1987 as an extension of the Culpeper Foundation's ongoing commitment to medical science, which has totalled approximately $20 million since 1970. The foundation is a private, non-profit charitable organization established under the will of the late Charles E. Culpeper, one of the early pioneers in the bottling and marketing of Coca-Cola. In recent years, the 50-year-old foundation has awarded more than $6 million annually to activities in health, science, technology, education, the arts and administration of justice.

Hortin was one of three researchers selected nationwide from among 50 applicants nominated by their respective institutions. The objective of the program is to support high achieving young physicians who are committed to careers in academic medicine.

Klahr visits pope to raise organ donor awareness

Saulo Klahr, M.D., Joseph Friedman Professor of Renal Diseases at the School of Medicine, was among a select group of physicians from around the world granted a private audience with Pope John Paul II. The purpose behind the visit in Vatican City on April 30, was to enlist support of the Catholic Church to promote the need for organ donation to its members.

"It was a unique experience — very impressive," Klahr said recently. "He is a very warm human being, you are made to feel very comfortable in his presence."

Klahr was among 26 nephrologists, transplant surgeons and their spouses, from Great Britain, Germany, Sweden, France, Italy, Yugoslavia, Poland, Israel and the United States, to sit before the Pontiff for about 25 minutes. Three of the physicians presented talks on the need for organ donation and importance of transplantation.

All of the physicians were in Bari, Italy, attending the Fourth Bari Seminar on Nephrology, for which Klahr was a keynote speaker. The pre-arranged visit to the Vatican took almost a year to schedule and was made possible by a nephrologist from Poland. Before the audience was granted, numerous documents on kidney transplantation and organ donation were submitted to the Vatican for review.

While the Catholic Church favors organ donation, Klahr, president of the National Kidney Foundation, says it has never taken a pro-active stand on the subject. Organ donation is an issue of worldwide concern, particularly in countries where there is no other adequate means of treatment in end-stage disease.

"In the United States we can keep people alive with kidney dialysis, but dialysis is not readily available in Eastern Europe," Klahr said. "We hope to increase transplant programs in those countries so a larger proportion of people will be taken care of."

In addition to foreign countries, Klahr also expressed concern over the number of transplant procedures performed in the United States. Up until 1986, he said the United States was experiencing a 10 percent annual increase in the number of kidney transplants. For more than three years the number of transplants has remained static.

"We perform about 9,000 transplants (nationwide) a year, but prior to 1986 we saw regular increases," Klahr says. "There has been no growth in the number of kidney transplants despite the fact that the population has increased. The reasons are not clear. AIDS, other concerns, we just don't have an explanation at this time."

Klahr is optimistic about his visit to Rome. The fact that the Pontiff was willing to listen to the group is significant. Klahr says Pope John Paul grants between 12 and 15 audiences a day, normally to groups of 500 or more. Very few are private, with 50 or fewer people.

"It was a positive exchange," he says. "We'll wait now to see if any directive comes from this in terms of local activity."

Grant re-elected to executive faculty

Neville Grant, M.D., has been elected a representative of part-time faculty members to the Executive Faculty of the School of Medicine.

He was chosen by the school's part-time faculty to serve on the council, which is the school's governing body. This is the second consecutive year Grant has been elected to the position.

Grant's internal medicine practice is with the Grant Medical Clinic, 114 North Taylor. He also is professor of clinical medicine at the School of Medicine and is on staff at Barnes, St. Luke's and Missouri Baptist hospitals.

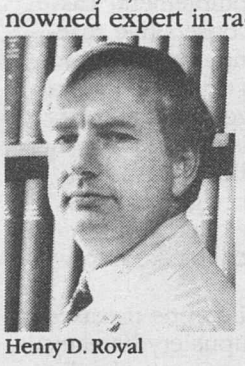
Grant is a member of numerous medical societies including the American Society of Internal Medicine, American Diabetes Association, Endocrine Society and the Amerian Medical Association.

MEDICAL RECORD

Royal to study radiation exposure in Chernobyl

At the request of the International Atomic Energy Agency (IAEA) and the government of the Soviet Union, Henry D. Royal, M.D., associate professor of radiology and associate director of nuclear medicine at the School of Medicine's Mallinckrodt Institute of Radiology, has been asked to perform an in-depth study of illnesses that have been attributed to the April 1986 explosion of a nuclear reactor in Chernobyl.

Royal, an internationally renowned expert in radiation exposure, is one of two physicians from the United States who is serving on the IAEA's medical effects team. In May, the team reviewed the data regarding the effects of the nuclear accident already collected by Soviet scientists.


Henry D. Royal

In the fall, the team will perform its own health survey, examining the people from contaminated and non-contaminated villages to determine the incidence of thyroid disease, anemia, and other potential radiation-related illnesses.

If an increase in disease is observed in villages contaminated by radiation, the team will attempt to determine whether the increase is related to the presence of radiation. Team members also will attend town meetings, listen to the concerns of the Soviet people, and answer questions.

"The people affected by the Chernobyl accident are our major concern," said Royal. "Although a complete assessment of the effects of the accident will take many years, the presence of an independent team of international experts will hopefully help alleviate some of the anxiety of the Soviet people."

Aging issues: Former surgeon general C. Everett Koop visited the School of Medicine last week to talk with experts on aging for an upcoming television program on health care in America. Here he interviews Mary T. Malley, a technician in the Division of Applied Physiology, about studies investigating the effects of exercise on aging. One hour of the five-hour series, scheduled to air on NBC in December, will be devoted to issues on aging. Others interviewed include William A. Peck, M.D., Stanley J. Birge, M.D., Gary D. Paige, M.D., Ph.D., and Marylen L. Mann.

Reich receives $6.8 million for alcohol/depression studies

Theodore Reich, M.D., Samuel and Mae S. Ludwig Professor of Psychiatry and professor of genetics at the School of Medicine, has been awarded four grants totalling $6.8 million to support his studies of genetic factors related to alcoholism and depression.

Two five-year awards totalling $4.6 million come from the National Institute on Alcohol Abuse and Alcoholism and will support the School of Medicine's participation in a multicenter study. Six centers across the country will collect data for the project. At the conclusion of the study the School of Medicine will be one of two institutions where the gathered data will be analyzed. Indiana University is the other site.

Reich's work centers on determining heredity factors that put some individuals at higher risk for alcoholism. He will be looking at families and pedigrees in the St. Louis area. The ultimate goal of the research is to determine who is at risk for disease due to genetic vulnerability and molecularly modify their susceptibility.

Reich has also received two other grants totalling $2.2 million from the National Institute of Mental Health. The awards will further the scientist's study of the genetics of bipolar disorders using methods of genetic linkage and support investigation of the familial transmission of bipolar manic depressive illness. Reich will serve as principal investigator on these projects, examining familial transmission of bipolar manic depressive illness. He will attempt to identify, through psychiatric assessments and blood samples from large extended pedigrees and smaller families, genetic markers to determine the location of the gene that is responsible for the disorder. The School of Medicine is one of 10 research centers involved in the five-year project, which will also look at possible genetic components of Alzheimer's Disease and schizophrenia. Reich is serving as chairman of the steering committee that oversees the multicenter study.

Reich is psychiatrist-in-chief of the Department of Psychiatry at Jewish Hospital, a sponsoring institution of the Washington University Medical Center. He has been on the School of Medicine faculty since 1971.

Becker honored for eye research

Bernard Becker, M.D., former head of the department of ophthalmology at the School of Medicine, recently received the Alcon Research Institute Award for his outstanding contribution in the field of vision research.

Becker was one of 10 scientists to receive the $50,000 award, which is presented annually by the Research and Development Division of Alcon Laboratories, Fort Worth, Texas. Becker currently is a professor in the department of ophthalmology,

Becker's research into the causes and control of glaucoma, the second leading cause of blindness in the United States, began in the early 1950s at Johns Hopkins University. His research with the drug acetazolamide established the basis for its wide use in control of glaucoma.

A graduate of Princeton University and Harvard Medical School, Becker headed the ophthalmology department at the School of Medicine for 34 years, stepping down in 1988. He continues to teach and conduct research.

A panel of ophthalmic researchers selected Becker to receive the award, which recognizes past achievement. Alcon is an international company specializing in ophthalmic products. The company has branch offices in 13 countries worldwide and sales of $900 million.

Neurosurgery society awards Grubb for research contributions

Robert L. Grubb Jr., M.D., professor of radiology and neurological surgery at the School of Medicine, has been awarded the prestigious Grass Prize by the Society of Neurological Surgeons.

The Society of Neurological Surgeons is a group of senior neurosurgical educators and training program directors. The society awards the Grass Prize to neurosurgeons who have demonstrated a long-term commitment and outstanding contributions to research in neurological surgery. Only seven neurological surgeons have received this honor.

Grubb has conducted extensive research on the manner in which cerebral blood vessels are regulated to meet the metabolic needs of the brain. He has also made valuable contributions to understanding how diseases such as stroke disturb this regulation.

In collaboration with other researchers at Washington University, Grubb has performed pioneering studies using PET scanning, a technique in which the distribution and uptake of radioactive isotopes in various regions of the brain is imaged with great accuracy. He has characterized the changes that occur in blood flow, blood volume, and metabolism when one of the carotid arteries becomes occluded, and has described the alterations in cerebral blood flow control that occur after the rupture of an intracranial aneurysm. These studies provide the basis for a more scientific assessment of the treatment of patients at risk for stroke.

In addition, Grubb is the author of more than 100 scientific publications and has been productive in the investigation of a number of issues related to the treatment of ruptured intracranial aneurysm, cerebral vasospasm, surgery of the internal carotid artery and brain injury.

Volunteers needed for diabetes study

Researchers at the School of Medicine are seeking volunteers to test a new drug for people who have diabetes and elevated triglyceride levels.

The study, headed by Richard E. Ostlund Jr., M.D., associate professor of medicine, will investigate the drug gemfibrozil to determine its effect on controlling triglyceride and cholesterol levels in patients with noninsulin-dependent diabetes mellitus.

Diabetes is often associated with abnormalities in lipid regulation. These include elevated levels of plasma triglycerides and low-density lipoprotein (LDL cholesterol), as well as low levels of the good kind of cholesterol, called high density lipoprotein or HDL. People with diabetes are at higher risk for heart disease because of these irregularities.

To qualify for the study, volunteers need to be 35 years of age or older with noninsulin-dependent (type II) diabetes, have elevated triglyceride levels and be willing to follow the American Diabetes Association diet.

Selected participants will enter an eight-week baseline period where they will have their blood analyzed before and after a prescription to follow the American Diabetes Association diet. Qualifying patients will then either receive gemfibrozil or a placebo for 20 weeks, while continuing to follow the diet and routine diabetes management. Assessments for safety, lipid levels and glycemic control will be carried out at specified intervals.

Participants chosen for the study will receive free physical exams, consultation with registered dietitians and information on how to manage diabetes.

For more information about participation in the study, call Carolyn Fritschle, 362-8298.

PERSONNEL NEWS

Two new CREF accounts are available

The CREF Bond Market Account and the CREF Social Choice Account began operations on March 1, 1990. Both accounts are available for accumulating retirement benefits in all CREF Supplemental Retirement Annuities. They also are available for participants with CREF Retirement Annuities and Group Retirement Annuities.

Bond Market Account

The CREF Bond Market Account invests primarily in high- and medium-quality fixed-income securities. The account's investment objective is favorable long-term returns through high-current interest income and capital preservation.

The account invests mainly in long-term and intermediate-term securities. However, the account may also invest in short-term (money market) investments to take advantage of attractive short-term opportunities and to preserve liquidity.

The Bond Market Account's long-term and intermediate-term securities are diversified among a range of fixed-income market sectors. These include securities issued or guaranteed by the U.S. government or its agencies; publicly traded corporate bonds; and mortgage-related or other asset-backed securities.

The Bond Market Account is an accumulation-only account. You can use the account while you are saving for retirement, but to receive income, you will need to transfer accumulations to one or more income-paying annuity such as TIAA, the CREF Stock Account or the CREF Money Market Account.

As with any variable annuity, the value of accumulation units fluctuates and no guarantees are provided. The account's total return will be relatively stable when interest rates are stable and will vary when interest rates rise or fall. Generally, the portfolio value will increase when interest rates fall and decrease when interest rates rise.

The Bond Market Account may be right for you if you want to diversify your retirement savings beyond stocks and money market instruments. Historically, over long periods bonds have experienced less volatility than common stocks and greater returns than money market investments, which makes them attractive to many people for their retirement savings.

You may also find the Bond Market Account useful if you want an investment in fixed-income securities with the flexibility to transfer your accumulation to other types of investments as your needs or views change. Because the account is offered through CREF, you benefit from CREF's long-term outlook and investment expertise. But because bond funds can fluctuate in value, the Bond Market Account may not be right for everyone. This account probably should not be the sole choice for your retirement savings.

Social Choice Account

The CREF Social Choice Account invests in stocks, bonds and money market securities issued by companies conducting their activities in a manner that meets specified social criteria. The account's investment objective is to provide investment returns that reflect the broad investment performance of the financial markets while giving special consideration to certain social criteria. It is a balanced account.

Initially, the account will not invest in securities of companies that:

- Have economic ties to South Africa;
- Have operations in Northern Ireland and (1) have not adopted the MacBride Principles or (2) have not conducted business consistent with these principles and in compliance with the Fair Employment Act (Northern Ireland) of 1989;
- Produce nuclear energy;
- Have a significant portion of their business involved in the manufacture of weapons; or
- Produce and market alcoholic beverages or tobacco.

The Social Choice Account may alter these criteria from time to time. Environmental concerns will be considered when appropriate guidelines are developed.

Because some people may want to invest all of their retirement savings in this account, it is designed as a balanced fund diversified among stocks, bonds and money market investments. And because the account is offered through CREF, you benefit from CREF's long-term outlook and investment expertise.

Funds invested according to social as well as financial criteria are relatively new and thus do not have long performance records. It is hard to predict how they will perform over time. Because investments in such accounts are selected in part based on social criteria, their returns may be lower than those for funds that select investments for purely financial reasons. But because balanced funds hold stocks, bonds and money market investments, they tend not to fluctuate as greatly as funds holding a single type of security. And, although the potential for loss is somewhat less, the potential for gain also is somewhat less. For these reasons, the Social Choice Account may not be right for everyone.

Currently, you can participate in the Social Choice Account only while you are accumulating your retirement savings. CREF plans to make the account available for the payment of retirement income, with the full range of CREF income options. Until that time, however, you will need to transfer to TIAA or the CREF Stock or Money Market accounts to receive annuity income.

You can start using the new accounts immediately in your CREF Retirement Annuities and Supplemental Retirement Annuities. To allocate premiums or to transfer accumulations, call the CREF automated telephone service toll free at 1-800-842-2252. Participants using a telecommunications device for the deaf should call 1-800-842-2755.

St. Louis Teachers Credit Union open to employees

The services of the St. Louis Teachers Credit Union are available to the Washington University community.

The credit union offers a wide variety of services to meet everyday financial needs. These services include two checking accounts to choose from — Share Draft I, which is no minimum balance checking, or Share Draft II, interest checking; automated teller services; direct deposit; payroll deduction; loan services such as first mortgage, home improvement, home equity, VISA credit card, signature loan, line of credit, student loans and loans-by-phone; credit life and disability insurance; individual retirement accounts; financial management/counseling; televest discount brokerage service; and Christmas/vacation savings.

Immediate family members of a St. Louis Teachers Credit Union member may join the credit union. The credit union defines immediate family members as father, mother, sister, brother, spouse, child and grandchild.

No matter where your career or life's circumstances take you, your membership is retained for your lifetime.

The Credit Union's main office is located at 3651 Forest Park, St. Louis, MO 63108, 534-7610; the University City office is at 7350 Olive Blvd., St. Louis, MO 63130, 721-5222.

St. Louis Teachers Credit Union brochures are available in the Hilltop Campus' Personnel Office, Room 126, North Brookings and at the medical school's Personnel Office, 1130 Hampton Ave., 726-7500.

Hilltop Campus holiday schedule is set

The following holiday schedule has been approved for the 1990-91 fiscal year for all employees on the Hilltop Campus other than those represented by union contracts.

Holiday	Date	Date(s) of Recognition
Personal Holiday	Open	One day during the year*
Independence Day	July 4	July 4, 1990
Labor Day	Sept. 3	Sept. 3, 1990
Thanksgiving	Nov. 22	Nov. 22, 1990 Nov. 23, 1990
Christmas	Dec. 25	Dec. 24, 1990 Dec. 25, 1990
New Year's Day	Jan. 1	Dec. 31, 1990 Jan. 1, 1991
M.L. King, Jr.	Jan. 15	Jan. 21, 1991
Washington's	Feb. 22	Feb. 18, 1991
Memorial Day	May 30	May 27, 1991

*The personal holiday may be used by staff personnel for any personal reason. It is available after six months of service with the advance approval of the supervisor. It cannot be used as the last day of employment. Employees who have not used sick leave during the previous fiscal year will be entitled to additional prearranged personal holidays as specified in the sick-leave policy.

In case an employee is scheduled to work on a holiday, a day off in lieu of the holiday will be given. In most cases the compensatory day for the holiday should be given within the period of one month after the holiday is worked.

University increases health allowance

Effective July 1, 1990, the University contribution toward the cost of health and dental insurance will increase from $124 per month to $136 per month. The July 31, 1990, payroll checks will reflect this increase in the University contribution.

Professional job searches under way

Washington University is conducting searches to fill professional positions on the Hilltop Campus.

Associate Director of Corporate and Foundation Relations and Director of Development for the Center for the Study of American Business (search extended)

Washington University seeks a skilled and experienced individual to serve a dual role. As associate director of Corporate and Foundation Relations, responsibilities will include identifying, cultivating and soliciting corporations and foundations; providing staff support for the University's Corporate Partners program; serving as a resource to senior administrative officers; coordinating the University's project and prospect clearance process; coordinating the proposal development process; and providing staff support on grant-related activities. Responsibilities as director of development for the Center for the Study of American Business will include identifying, cultivating and soliciting individuals, corporations and foundations for annual support; and coordinating an advisory volunteer group to assist with the solicitation of major donors.

Qualifications: a college or university degree is required and a master's preferred; three years of experience in corporate and foundation relations or a closely related field; and experience in proposal development, prospect research and/or foundation relations preferred.

Send letter of application, vita and three references to: Dr. Randy Farmer, Director of Corporate and Foundation Relations, Washington University, Campus Box 1193, One Brookings Drive, St. Louis, MO 63130.

Systems Librarian (search reopened)

The Olin Library System seeks a systems librarian.

The systems librarian participates in the ongoing development of an automated library information system and helps maintain the efficient operation of existing automated processes.

Qualifications: working experience in a library processing environment; programming experience and/or coursework in assembler language and/or a block-structured higher level language such as PL/I, Pascal or "C," preferably on a mainframe system; and knowledge of interactive transaction processing and batch text-processing applications. An MLS from an ALA-accredited library school or a graduate degree in a discipline related to information science is required.

For full consideration, applicants should send a resume and three letters of reference to: Virginia F. Toliver, Director of Administration and Planning, Washington University, Campus Box 1061, One Brookings Drive, St. Louis, MO 63130-4899.

In addition to the professional searches, qualified candidates are sought to fill the following Hilltop Campus positions: accounting, three positions; administrative assistant, five positions; clerical, five positions; coordinator, one position; drafter, one position; engineer, one position; laboratory, four positions; librarian, four positions; manager, two positions; part-time, five positions; programmer, one position; secretarial, 10 positions; and maintenance, one position.

Information about these and other positions is available through the Hilltop Campus Personnel Office, Room 126, North Brookings, 889-5990, or the Medical Campus Personnel Office, 1130 Hampton Ave., 726-7500.

Personnel News

Personnel News appears monthly in the Record and is prepared by Gloria W. White, vice chancellor for personnel and affirmative action, and other members of the Personnel Office. Personnel News is designed to keep Washington University employees and their families informed of the benefits and opportunities available at the University.

CALENDAR

July 5-Aug. 2

MUSIC

Sunday, July 8

8 p.m. Dept. of Music Presents Gateway Festival Orchestra Concert, featuring violin soloist Juliet Kurtzman. Brookings Quadrangle; Graham Chapel in case of rain. For more info., call 889-5574.

Sunday, July 15

8 p.m. Dept. of Music Presents Gateway Festival Orchestra Concert, featuring trumpet soloist James Bovinette. Brookings Quadrangle; Graham Chapel in case of rain. For more info., call 889-5574.

Sunday, July 22

8 p.m. Dept. of Music Presents Gateway Festival Orchestra Concert, featuring violin soloists Haruka Watanabe and James Richards. Brookings Quadrangle; Graham Chapel in case of rain. For more info., call 889-5574.

Monday, July 23

8 p.m. Dept. of Music Presents Gateway Festival Orchestra Chamber Concert. Graham Chapel. Cost: $5 for general admission; $2 for students. For more info., call 889-5574.

Sunday, July 29

8 p.m. Dept. of Music Presents Gateway Festival Orchestra Concert, featuring oboe soloist Tom Parkes and narrator Tom Barclay. Brookings Quadrangle; Graham Chapel in case of rain. For more info., call 889-5574.

Tuesday, July 31

8 p.m. Dept. of Music Presents Classic Summer Orchestra Concert, conducted by Dan Presgrave, music director, and featuring trumpet soloist Paul Hecht. St. Louis Conservatory and Schools for the Arts, 560 Trinity Ave. For more info., call 889-5574.

EXHIBITIONS

"Russians in America: Collaborations by Komar & Melamid," featuring work by Vitaly Komar and Alexander Melamid, Russian emigre artists whose images satirize official Soviet ideological poster art. Gallery of Art, Steinberg Hall. Through Aug. 12. 10 a.m.-5 p.m. Tuesdays through Fridays; 1-5 p.m. weekends. For more info., call 889-4523.

"Core Exhibition," featuring works by freshmen and sophomores in the University's School of Fine Arts. Through July 20. Bixby Gallery, Bixby Hall. 10 a.m.-4 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4643.

"A Celebration of Howard Nemerov's Verse: Books, Manuscripts and Memorabilia From the Modern Literature Collection." Exhibit includes examples of fiction, criticism and poetry as well as other memorabilia. Through July 31. Special Collections, Olin Library, Level 5. 8:30 a.m.-5 p.m. weekdays. For more info., call 889-5487.

MISCELLANY

Monday, July 9

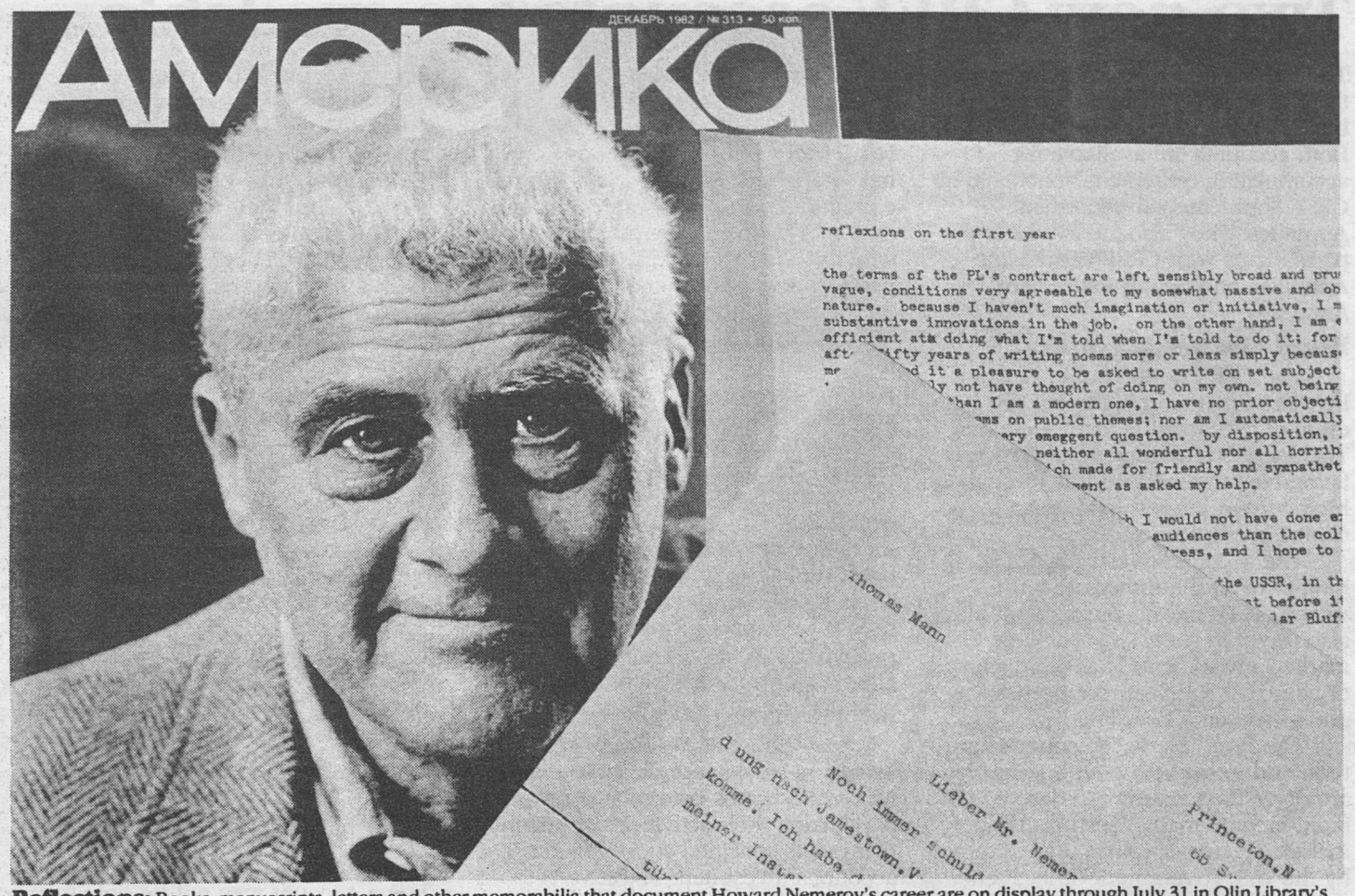
9 a.m.-4 p.m. Dept. of Athletics Presents Bears' Summer Programs, "HIT Volleyball Camps — Achievers," with Teri Clemens, WU head volleyball coach. **Camp is full.** Through July 13; on Friday, July 13, class runs from 9 a.m.-noon. For players entering 9th through 12th grades. Field House and Recreational Gym. Cost: $90. For more info., call 889-5220.

Friday, July 13

9 a.m.-4 p.m. Dept. of Athletics Presents Bears' Summer Programs, "HIT Volleyball Camps — Elite Achievers Weekend Camp," with Teri Clemens, Washington University head volleyball coach. **Camp is full.** Through July 15. Also a plan B is available, which includes Elite weekend plus Achievers camp, July 9-15. Letter from high school coach and/or approval of 1989 HIT staff. Field House and Recreational Gym. Cost: $45 for weekend camp; $115 for Plan B. For more info., call 889-5220.

Calendar Deadline

The deadline to submit items for August 2-30 calendar of the Washington University Record is July 20. Items must be typed and state time, date, place, nature of event, sponsor and admission cost. Incomplete items will not be printed. If available, include speaker's name and identification and the title of the event; also include your name and telephone number. Send items to Andrew Cox, calendar editor, Box 1070, or by electronic mail to p72245AC at WUVMC.



Reflections: Books, manuscripts, letters and other memorabilia that document Howard Nemerov's career are on display through July 31 in Olin Library's Special Collections, Level 5. Nemerov, whose term as U.S. poet laureate recently ended, is Edward Mallinckrodt Distinguished University Professor Emeritus of English and Distinguished Poet-in-Residence. Included in the exhibit, which is open from 8:30 a.m. to 5 p.m. weekdays, are a 1982 cover article in Amerika, a U.S. Information Agency magazine for Russians; a prose reflection of Nemerov's first year as poet laureate; and a letter written to Nemerov by Thomas Mann, the Nobel Prize-winning German novelist and essayist.

Law students excel in national competitions

Students at the School of Law have excelled in competitions this year, winning one national championship in negotiation skills and finishing third in two other national competitions, one in trial skills and the other in appellate argument.

Two students captured first place in the 1990 American Bar Association (ABA) National Negotiation Competition held in Los Angeles.

Third-year law students William A. Linton and Janice L. Treutelaar, winners of the Midwest regional tournament, defeated seven regional championship teams from across the country to win the national title. Approximately 70 law schools competed in the regional tournaments. M. Susan Carlson, J.D., visiting associate professor of law, coached the team.

Two teams captured top honors at the Midwest Regional Trial Competition hosted by the University and were selected to compete in the ABA/American College of Trial Lawyers National Trial Competition held in Houston. Approximately 200 teams competed in regional competitions.

The team of third-year law students Vernetta Gill and Christopher Hedican and second-year law student William Langenbacher captured third place. The team of third-year law student Paula Finlay and second-year law students J. Calvin Downing and Mark Rudder finished with a 2-1 record.

The law school has placed first or second in the Midwest region and advanced to the National Trial Competition, the largest and most prestigious student trial competition, for 10 consecutive years. The school won the title in both 1983 and 1986. No other school has won the national title more than twice, according to Karen Tokarz, LL.M., professor of law and director of clinical education.

The 1990 teams were coached by David Mason, an associate at the Peper, Martin, Jensen, Maichel & Hetlage law firm in St. Louis and an adjunct law professor. Mason was on the law school's 1983 national championship team.

At the National Environmental Moot Court Competition held at Pace University in New York, third-year law student Belinda Bush and second-year law student Christopher Horner finished in third place, competing against 52 teams from across the country. The team of third-year law students Al Hilado and Rita Nichols reached the quarterfinals. Washington University was the only school to have two teams reach the quarterfinals.

Three team members also won individual honors at the environmental competition. Bush and Hilado each received two awards for their oral presentations and Horner received one award. Richard J. Lazarus, J.D., associate professor of law, was the faculty adviser, and Robin Wellford, J.D., a research and writing instructor, coached the teams in the New York competition.

Hamburger — *continued from p. 1*

moved, could regulate in the same manner as the embryo of a frog with no resulting deficiencies in learning habits. Naturally, he was interested in discussing this with me."

In 1935, with his fellowship appointment at the University of Chicago ending, Hamburger had to make a painful decision. Because of his Jewish ancestry, Hamburger found the domestic situation in Hitler's Germany intolerable, and he could not return to his homeland. He was fortunate, he says, to find a teaching position at Washington University in 1935, where his career and reputation flourished.

Called one of the "supreme biologists of our time" by John T. Edsall, editor of the Journal of the History of Biology, Hamburger joined the Washington University faculty as assistant professor of zoology. Six years later, he became department chairman, a post he held until 1966. Along the way, he became a world leader in research that involved the development of the nervous system and the behavior of embryos, including basic contributions to the study of embryonic behavior that apply also to human fetuses.

Hamburger was among the first scientists to show the effects of the growing limb upon the parts of the nervous system that control the muscles in that limb. He also established the basic ground rules that govern this relationship. In 1947, he collaborated with Rita Levi-Montalcini, Ph.D., who is professor emerita of biology at the University and also affiliated with the Italian National Research Council in Rome. Together, the scientists found that nerve cells that normally innervate limbs will not survive in the absence of the limb.

This important find led to Levi-Montalcini's discovery of the Nerve Growth Factor, a key protein in the development and growth of certain nerve cells. The NGF was the first growth factor to be discovered, the best one yet analyzed and the benchmark for the study of other growth factors. Scientists believe that Nerve Growth Factor is integral in exploring cures for cancer and paralysis.

Levi-Montalcini later shared the 1986 Nobel Prize for physiology or medicine with Stanley Cohen, Ph.D., a biochemist now at Vanderbilt University, who collaborated with Levi-Montalcini in Hamburger's laboratory.

Born in 1900 in Silesia, Germany, now a part of Poland, Hamburger still serves on the faculty and regularly works in his Monsanto Hall office. In 1988, he published a book on *The Heritage of Experimental Embryology: Hans Spemann and the Organizer*. This month, Birkhauser Inc. of Boston, Mass., will publish *Viktor Hamburger: Neuroembryology Selected Essays*, a collection of 28 essays Hamburger has written during his long career.

Aerial campus shot

The physical facilities department has a new aerial shot of the Hilltop Campus and print orders are being taken now. Departments interested in ordering a print, which usually is 3 feet by 4 feet, may call physical facilities at 889-5550. The price of the print will depend on the number of orders.